

CLAIMS

What is claimed is:

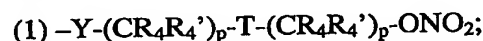
1. A nitrosated antimicrobial compound, a nitrosated adenosine antagonist, a nitrosated LTB₄ antagonist, a nitrosated mucoregulator, a nitrosated purine agonist or a pharmaceutically acceptable salt thereof, having at least one nitrosated carboxylic acid group (-C(O)X), nitrosated hydroxyl group (-OX), nitrosated thiol group (-SX) and/or primary or secondary nitrosated amine group (-NX); wherein the nitrosated antimicrobial compound is a nitrosated acediasulfone, a nitrosated aceturate, a nitrosated acetyl sulfametossipirazine, a nitrosated acetyl sulfamethoxypyrazine, a nitrosated acranil, a nitrosated albendazole, a nitrosated alexidine, a nitrosated amatadine, a nitrosated ambazone, an a nitrosated amdinocillin, a nitrosated amikacin, a nitrosated p-aminosalicylic acid, a nitrosated p-aminosalicylic acid hydrazine, a nitrosated amoxicillin, a nitrosated ampicillin, a nitrosated anisomycin, a nitrosated apalcillin, a nitrosated apicyclin, a nitrosated apramycin, a nitrosated arbekacin, a nitrosated argininsa, a nitrosated aspoxicillin, a nitrosated azidamfenicol, a nitrosated azidocillin, a nitrosated azithromycin, a nitrosated azlocillin, a nitrosated aztreonam, a nitrosated bacampicillin, a nitrosated benzoylpas, a nitrosated benzyl penicillin acid, a nitrosated benzyl sulfamide, a nitrosated bicozamycin, a nitrosated bipenam, a nitrosated brodimoprim, a nitrosated capreomycin, a nitrosated carbenicillin, a nitrosated carbomycin, a nitrosated cafazedone, a nitrosated carindacillin, a nitrosated carumonam, a nitrosated cefcapene pivoxil, a nitrosated cefaclor, a nitrosated cefadroxil, a nitrosated cefafroxil, a nitrosated cefamandole, a nitrosated cefatamet, a nitrosated cefatrizine, a nitrosated cefazedone, a nitrosated cefazolin, a nitrosated cefbuperazone, a nitrosated cefclidin, a nitrosated cefdinir, a nitrosated cefditoren, a nitrosated cefixime, a nitrosated cefmenoxime, a nitrosated cefmetazole, a nitrosated cefminox, a nitrosated cefodizime, a nitrosated cefonicid, a nitrosated cefoperazone, a nitrosated ceforanide, a nitrosated cefotaxime, a nitrosated cefotetan, a nitrosated cefotiam, a nitrosated cefoxitin, a nitrosated cefozopran, a nitrosated cefpimizole, a nitrosated cefpiramide, a nitrosated cefpirome, a nitrosated cefpodoxime proxetil, a nitrosated cefprozil, a nitrosated cefroxadine, a nitrosated cefsulodin, a nitrosated ceftazidime, a nitrosated cefteram, a nitrosated ceftazole, a nitrosated ceftibuten, a nitrosated ceftiofur, a nitrosated ceftizoxime, a nitrosated ceftriaxone, a nitrosated cefuroxime, a nitrosated cefuzonam, a nitrosated cephacetrile sodium, a nitrosated cephadrine, a nitrosated cephalixin, a nitrosated cephaloglycin, a nitrosated cephaloridine, a nitrosated cephalosporin C, a nitrosated cephalothin, a nitrosated cephapirin sodium, a

nitrosated cephradine, a nitrosated chloramphenicol, a nitrosated chlorotetracycline, a nitrosated cinoxacin, a nitrosated ciprofloxacin, a nitrosated claritromycin, a nitrosated clavulanic acid, a nitrosated clinafloxacin, a nitrosated clindamycin, a nitrosated clofazimine, a nitrosated clofoctal, a nitrosated clometocillin, a nitrosated clomocycline, a nitrosated cloxacillin, a nitrosated cloxyquin, a nitrosated cyclacilline, a nitrosated cycloserine, a nitrosated danoflaxcin, a nitrosated dapsone, a nitrosated deoxycycline, a nitrosated deoxydihydrostreptomycin, a nitrosated dibekacin, a nitrosated dicloxacillin, a nitrosated difloxacin, a nitrosated dihydrostreptomycin, a nitrosated dimetridazole, a nitrosated diminazene, a nitrosated dirirtomycin, a nitrosated eflornithine, a nitrosated enrofloxacin, a nitrosated enviomycin, a nitrosated epicillin, a nitrosated erythromycin, a nitrosated etacillin, a nitrosated ethambutol, a nitrosated ethionamide, a nitrosated famcyclovir, a nitrosated fenbecillin, a nitrosated fleroxacin, a nitrosated flomoxef, a nitrosated floxacillin, a nitrosated flumequine, a nitrosated furonazide, a nitrosated fortimycin, a nitrosated furazolum, a nitrosated gentamycin, a nitrosated glyconiazide, a nitrosated grepafloxacin, a nitrosated guamecycline, a nitrosated halofuginone, a nitrosated hetacillin, a nitrosated homidium, a nitrosated hydroxyl-stilbamidine, a nitrosated ibostamycin, a nitrosated imidocarb, a nitrosated imipenam, a nitrosated ipronidazole, a nitrosated isoniazide, a nitrosated josamycin, a nitrosated inosine, a nitrosated lauroguadine, a nitrosated lenampicillin, a nitrosated lincomycin, a nitrosated lomefloxacin, a nitrosated loracarbef, a nitrosated lymecyclin, a nitrosated mafenide, a nitrosated mebendazole, a nitrosated meclocyclin, a nitrosated meropenem, a nitrosated metampicillin, a nitrosated metaciline, a nitrosated methacycline, a nitrosated methicillin, a nitrosated metronidazole, a nitrosated 4'-(methylsulfamoyl) sulfanilamide, a nitrosated mezlocillin, a nitrosated meziocillin, a nitrosated micronomycin, a nitrosated midecamycin A₁, a nitrosated minocycline, a nitrosated miocamycin, a nitrosated miokamycin, a nitrosated morfazinamide, a nitrosated moxalactam, a nitrosated mupirocin, a nitrosated myxin, a nitrosated nadifloxacin, a nitrosated nalidixic acid, a nitrosated negamycin, a nitrosated neomycin, a nitrosated netlimycin, a nitrosated nifurfoline, a nitrosated nifurpirinol, a nitrosated nifurprazine, a nitrosated nimorazole, a nitrosated nitroxoline, a nitrosated norfloxacin, a nitrosated novobiocin, a nitrosated ofloxacin, a nitrosated oleandomycin, a nitrosated opiniazide, a nitrosated oxacillin, a nitrosated oxophenarsine, a nitrosated oxolinic acid, a nitrosated oxytetracycline, a nitrosated panipenam, a nitrosated paromycin, a nitrosated pazufloxacin, a nitrosated pefloxacin, a nitrosated penicillin G, a nitrosated penicillin N, a nitrosated penicillin O, a nitrosated penicillin V, a nitrosated penethamate hydroiodide, a nitrosated pentamidine, a nitrosated

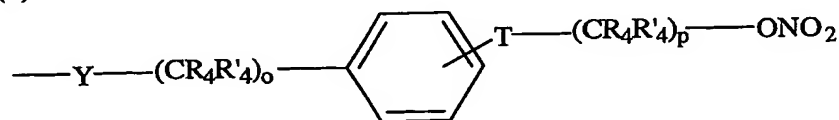
phenamidine, a nitrosated phenethicillin, a nitrosated phenyl aminosalicylate, a nitrosated pipacycline, a nitrosated pipemidic acid, a nitrosated piperacillin, a nitrosated pirlimycin, a nitrosated piromidic acid, a nitrosated pivampicillin, a nitrosated pivcefalexin, a nitrosated profiromycin, a nitrosated propamidine, a nitrosated propicillin, a nitrosated protionamide, a nitrosated puraltadone, a nitrosated puromycin, a nitrosated pyrazinamide, a nitrosated pyrimethamine, a nitrosated quinacillin, a nitrosated quinacrine, a nitrosated quinapyramine, a nitrosated quintine, a nitrosated ribostamycin, a nitrosated rifabutine, a nitrosated rifamide, a nitrosated rifampin, a nitrosated rifamycin, a nitrosated rifanpin, a nitrosated rifapentine, a nitrosated rifaxymine, a nitrosated ritipenem, a nitrosated rokitamycin, a nitrosated rolitetracycline, a nitrosated rosamycin, a nitrosated rifloxacin, a nitrosated salazosulfadimidine, a nitrosated salinazid, a nitrosated sancycline, a nitrosated sarafloxacin, a nitrosated sedacamycin, a nitrosated secnidazole, a nitrosated sisomycin, a nitrosated sparfloxacin, a nitrosated spectinomycin, a nitrosated spiramycin, a nitrosated spiramycin I, a nitrosated spiramycin II, a nitrosated spiramycin III, a nitrosated stilbamidine, a nitrosated streptomycin, a nitrosated streptonicizid, a nitrosated sulbactam, a nitrosated sulbenicillin, a nitrosated succisulfone, a nitrosated sulfanilamide, a nitrosated sulfabenzamide, a nitrosated sulfacetamide, a nitrosated sulfachloropyridazine, a nitrosated sulfachrysoidine, a nitrosated sulfacytine, a nitrosated sulfadiazine, a nitrosated sulfadicramide, a nitrosated sulfadimethoxine, a nitrosated sulfadoxine, a nitrosated sulfadrazine, a nitrosated sulfaetidol, a nitrosated sulfafenazol, a nitrosated sulfaguanidine, a nitrosated sulfaguanole, a nitrosated sulfalene, a nitrosated sulfamerazine, a nitrosated sulfameter, a nitrosated sulfamethazine, a nitrosated sulfamethizole, a nitrosated sulfamethomidine, a nitrosated sulfamethoxazole, a nitrosated sulfamethoxypyridazine, a nitrosated sulfamethylthiazol, a nitrosated sulfamethylthiazole, a nitrosated sulfametrole, a nitrosated sulfamidochrysoidine, a nitrosated sulfamoxole, a nitrosated sulfanilamide, a nitrosated 4-sulfanilamido salicylic acid, a nitrosated 4-4'-sulfanilylbenzylamine, a nitrosated p-sulfanilylbenzylamine, a nitrosated 2-p-sulfinylanilinoethanol, a nitrosated sulfanilylurea, a nitrosated sulfoniazide, a nitrosated sulfaperine, a nitrosated sulfaphenazole, a nitrosated sulfaproxyline, a nitrosated sulfapyrazine, a nitrosated sulfapyridine, a nitrosated sulfathiazole, a nitrosated sulfaethidole, a nitrosated sulfathiourea, a nitrosated sulfisomidine, a nitrosated sulfasomizole, a nitrosated sulfasymazine, a nitrosated sulfisoxazole, 4,4'-sulfinyldianiline, a nitrosated N⁴-sulfanilylsulfanilamide, a nitrosated N-sulfanilyl-3,4-xylamide, a nitrosated sultamicillin, a nitrosated talampicillin, a nitrosated tambutol, a nitrosated taurolidine, a nitrosated teicoplanin, a nitrosated temocillin, a nitrosated tetracycline, a nitrosated tetroxoprim, a

nitrosated thiabendazole, a nitrosated thiazolsulfone, a nitrosated tibezoneum, a nitrosated ticarcillin, a nitrosated tigemonam, a nitrosated tinidazole, a nitrosated tobramycin, a nitrosated tosufloxacin, a nitrosated trimethoprim, a nitrosated troleandomycin, a nitrosated trospectomycin, a nitrosated trovafloxacin, a nitrosated tubercidine, a nitrosated miokamycin, a nitrosated oleandomycin, a nitrosated troleandomycin, a nitrosated vancomycin, a nitrosated verazide, a nitrosated viomycin, a nitrosated virginiamycin, a nitrosated zalcitabine, a nitrosated acyclovir, a nitrosated amatadine, a nitrosated cidofovir, a nitrosated cytarabine, a nitrosated didanosine, a nitrosated dideoxyadenosine, a nitrosated edoxudine, a nitrosated famciclovir, a nitrosated floxuridine, a nitrosated gancyclovir, a nitrosated idoxuridine, a nitrosated indanavir, a nitrosated kethoxal, a nitrosated lamivudine, a nitrosated MADU, a nitrosated penciclovir, a nitrosated podophyllotoxin, a nitrosated ribavirine, a nitrosated rimantadine, a nitrosated saquinavir, a nitrosated sorivudine, a nitrosated stavudine, a nitrosated trifluridine, a nitrosated valacyclovir, a nitrosated vidarabine, a nitrosated xenazoic acid, a nitrosated zalcitabine, a nitrosated zidovudine, a nitrosated daptomycin, a nitrosated duramycin, a nitrosated nafcillin, a nitrosated tigecycline, a nitrosated PA-1806, or a nitrosated PA-2794; the nitrosated adenosine agonist is a nitrosated CPX; the nitrosated LTB4 antagonist is a nitrosated amelubant; the nitrosated mucoregulator is a nitrosated talniflumate, a nitrosated MSI-2216, a nitrosated ML-03, or a nitrosated INO-4995; the nitrosated purine agonist is a nitrosated P2Y2 agonist, a nitrosated INS-37217, a nitrosated uridine 5'triphosphate or a nitrosated diquafosol tetrasodium;

wherein X is:

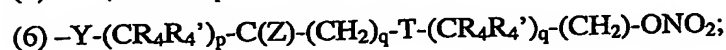
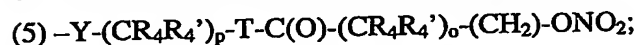
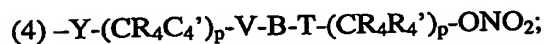
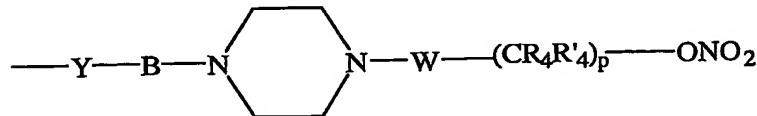


(2)



wherein T is ortho, meta or para;

(3)



- (7) $-Y-(CR_4R_4')_p-T-(CH_2)_q-V-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (8) $-Y-(CR_4R_4')_p-V-(CH_2)_q-V-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (9) $-Y-(CR_4R_4')_o-(W)_q-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (10) $-NR_j-O-(CH_2)_o-V-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (11) $-NR_j-O-(CH_2)_o-(W)_q-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (12) $-O-NR_j-(CH_2)_o-(W)_q-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (13) $-Y-(CH_2)_o-(W)_q-(CH_2)_o-V-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (14) $-Y-(CR_4R_4')_p-V-(CH_2)_o-(W)_q-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (15) $-O-NR_j-(CH_2)_o-V-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (16) $-Y-(CR_4R_4')_o-Q'-(CR_4R_4')_o-V-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (17) $-Y-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(W)_q-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (18) $-Y-(CR_4R_4')_p-T-(CR_4R_4')_p-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (19) $-Y-(CR_4R_4')_q-C(Z)-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (20) $-Y-(CR_4R_4')_p-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (21) $-Y-(CR_4R_4')_q-P(O)MM'$;
- (22) $-Y-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (23) $-Y-(CR_4R_4')_o-Q'-(CR_4R_4')_o-T-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (24) $-Y-(CR_4R_4')_q-(W)_q-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (25) $-Y-(CR_4R_4')_q-V-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (26) $-Y-(CR_4R_4')_p-(T)_o-(W)_q-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (27) $-Y-(CR_4R_4')_p-(W)_q-(T)_o-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (28) $-Y-(CR_4R_4')_q-C(Z)-V-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (29) $-Y-(CR_4R_4')_o-C(R_4)(ONO_2)-(CR_4R_4')_q-(T)_o-(W)_q-(T)_o-(CR_4R_4')_o-R_5$;
- (30) $-Y-(CR_4R_4')_o-V-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (31) $-Y-(CR_4R_4')_q-C(Z)-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (32) $-Y-(CR_4R_4')_p-V-(CR_4R_4')_p-(CH_2)-ONO_2$;
- (33) $-Y-(CR_4R_4')_p-V-(CH_2)_q-(T)_o-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (34) $-Y-(CR_4R_4')_p-(T)_o-Q'-(T)_o-(CR_4R_4')_q-(CH_2)-ONO_2$;
- (35) $-Y-(CR_4R_4')_q-C(Z)-(CR_4R_4')_q-V-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (36) $-Y-(CR_4R_4')_q-C(Z)-(CR_4R_4')_q-(W)_q-(CR_4R_4')_o-Q'-(CR_4R_4')_o-(CH_2)-ONO_2$;
- (37) $-NR_j-O-(CH_2)_o-V-(CR_4R_4')_o-Q'-(CH_2)-ONO_2$;
- (38) $-NR_j-O-(CH_2)_o-(W)_q-(CR_4R_4')_o-Q'-(CH_2)-ONO_2$;
- (39) $-O-NR_j-(CH_2)_o-(W)_q-(CR_4R_4')_o-Q'-(CH_2)-ONO_2$;
- (40) $-O-NR_j-(CH_2)_o-V-(CR_4R_4')_o-Q'-(CH_2)-ONO_2$;

(41) $-\text{NR}_j-\text{NR}_j-(\text{CR}_4\text{R}_4')_p-(\text{W})_q-(\text{T})_o-(\text{CR}_4\text{R}_4')_o-(\text{CH}_2)-\text{ONO}_2$; or

(42) $-\text{Y}-(\text{CR}_4\text{R}_4')_o-\text{Q}'-(\text{CR}_4\text{R}_4')_o-\text{ONO}_2$; or

(43) $-\text{Y}-(\text{CR}_4\text{R}_4')_o-\text{V}-(\text{CR}_4\text{R}_4')_o-\text{Q}-(\text{CR}_4\text{R}_4')_o-\text{ONO}_2$;

R_4 and R_4' at each occurrence are independently a hydrogen, lower alkyl group, $-\text{OH}$, $-\text{CH}_2\text{OH}$, $-\text{ONO}_2$, $-\text{NO}_2$ or $-\text{CH}_2\text{ONO}_2$; or R_4 and R_4' taken together with the carbon atom to which they are attached are a cycloalkyl group or a heterocyclic ring;

V is $-\text{C}(\text{O})-\text{T}-$, $-\text{T}-\text{C}(\text{O})-$, $-\text{T}-\text{C}(\text{O})-\text{T}$ or $\text{T}-\text{C}(\text{O})-\text{C}(\text{O})-\text{T}$;

W is a covalent bond or a carbonyl group;

T at each occurrence is independently an oxygen, $(\text{S}(\text{O})_o)_o$ or NR_j ;

R_j is a hydrogen, an alkyl group, an aryl group, a heterocyclic ring, an alkylcarbonyl group, an alkylaryl group, an alkylsulfinyl group, an alkylsulfonyl group, an arylsulfinyl group, an arylsulfonyl group, a sulfonamido group, a N -alkylsulfonamido group, a N,N -diarylsulfonamido group, a N -arylsulfonamido group, a N -alkyl- N -arylsulfonamido group, a carboxamido group or a hydroxyl group;

p at each occurrence is independently an integer from 1 to 6;

q at each occurrence is independently an integer from 1 to 3;

o at each occurrence is independently an integer from 0 to 2;

Y is independently a covalent bond, a carbonyl, an oxygen, $-\text{S}(\text{O})_o-$ or $-\text{NR}_j$;

B is either phenyl or $(\text{CH}_2)_o$;

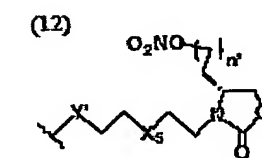
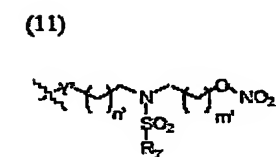
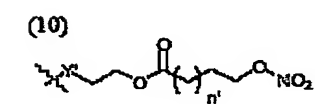
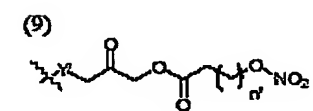
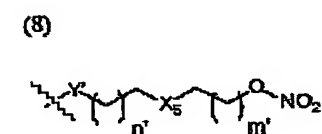
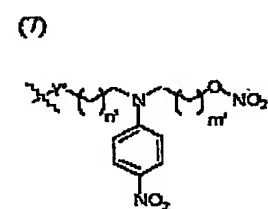
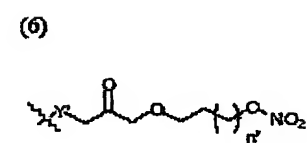
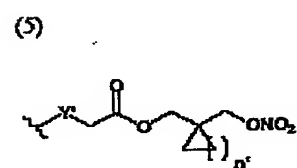
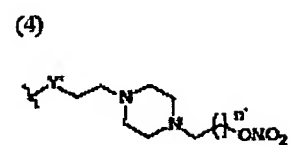
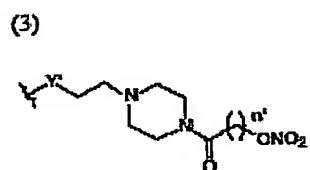
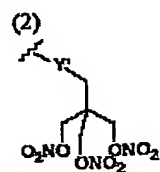
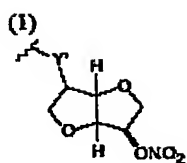
Q' is a cycloalkyl group, a heterocyclic ring or an aryl group;

Z is $(=\text{O})$, $(=\text{N}-\text{OR}_5)$, $(=\text{N}-\text{NR}_5\text{R}'_5)$ or $(=\text{CR}_5\text{R}'_5)$;

M and M' are each independently $-\text{O}^- \text{H}_3\text{N}^+(\text{CR}_4\text{R}'_4)_q-\text{CH}_2\text{ONO}_2$ or $-\text{T}-(\text{CR}_4\text{R}'_4)_o-\text{CH}_2\text{ONO}_2$; and

R_5 and R_5' at each occurrence are independently a hydrogen, a hydroxyl group, an alkyl group, an aryl group, an alkylsulfonyl group, an arylsulfonyl group, a carboxylic ester, an alkylcarbonyl group, an arylcarbonyl group, a carboxamido group, an alkoxyalkyl group, an alkoxyaryl group, a cycloalkyl group or a heterocyclic ring.

2. The nitrosated antimicrobial compound, the nitrosated adenosine antagonist, the a nitrosated LTB4 antagonist, the nitrosated mucoregulator, the nitrosated purine agonist of claim 1, wherein X is:

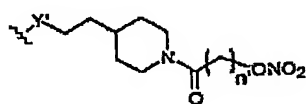


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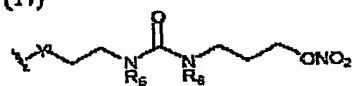


wherein T may be ortho, meta or para

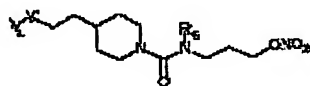
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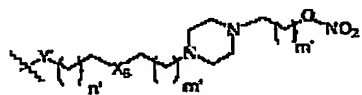
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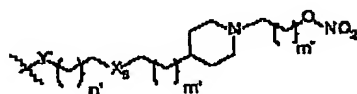
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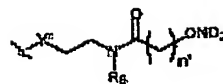
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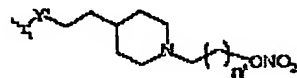
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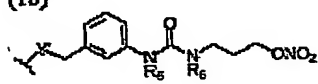
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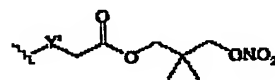
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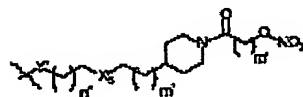
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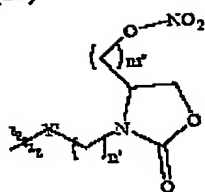
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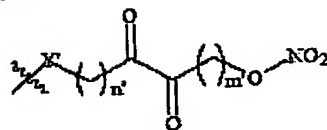
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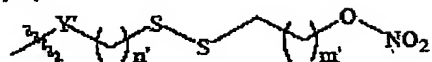
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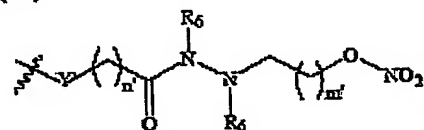
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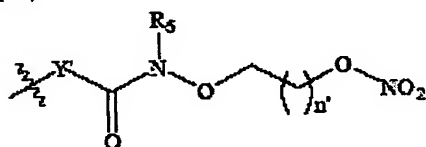
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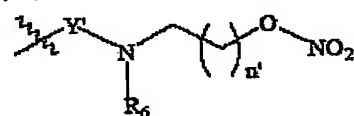
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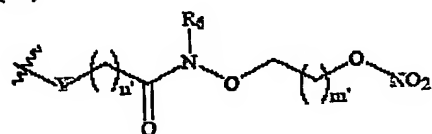
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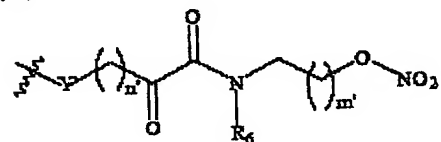
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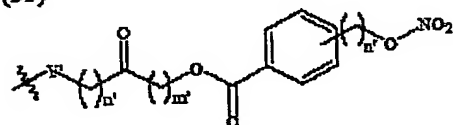
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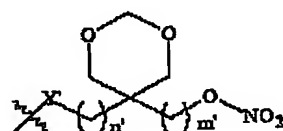
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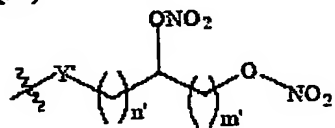
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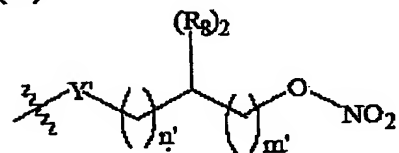
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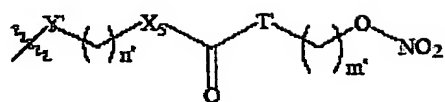
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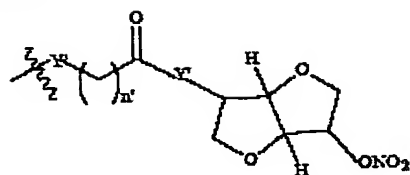
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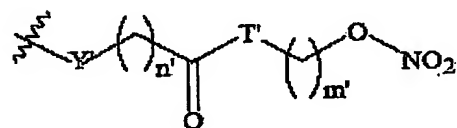
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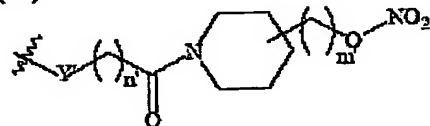
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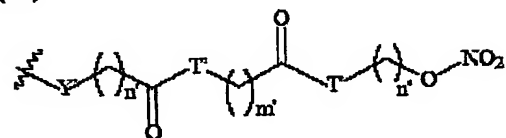
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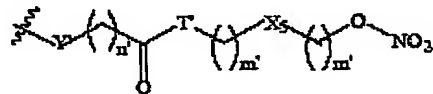
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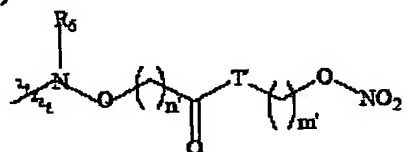
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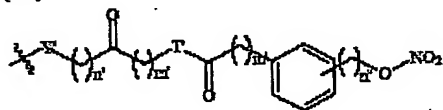
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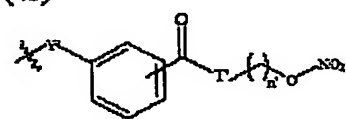
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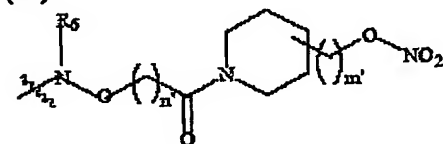
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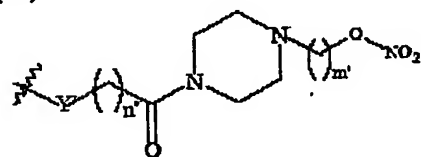
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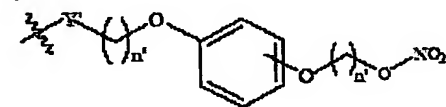
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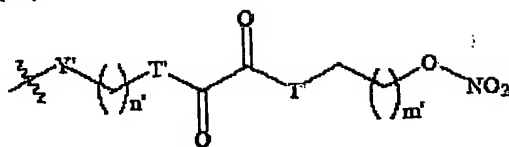
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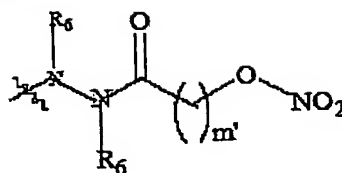
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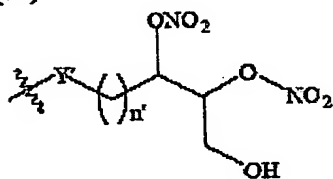
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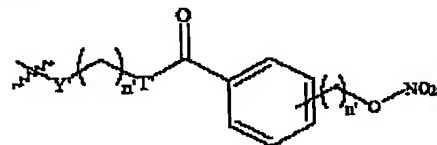
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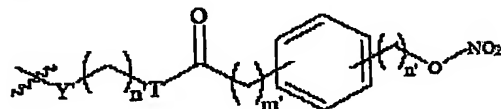
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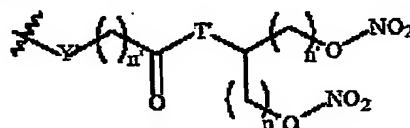
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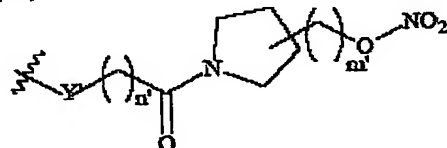
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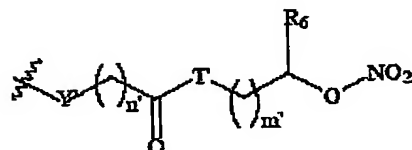
(54)



(55)



(56)



wherein:

Y' is oxygen or sulfur;

T' is oxygen, sulfur or NR₆;

5 X₅ is oxygen, (S(O)_o)_o or NR₆;

R₆ is a hydrogen, a lower alkyl group, an aryl group;

R₇ is a lower alkyl group or an aryl group;

R₈ at each occurrence is independently is a hydrogen, a hydroxyl group, a lower alkyl group, an aryl group, -NO₂, -CH₂-ONO₂ or -CH₂-OH;

0 n' and m' are each independently an integer from 0 to 10; and

o is as an integer from 0 to 2.

2. A composition comprising the nitrosated antimicrobial compound, the

nitrosated adenosine antagonist, the nitrosated LTB4 antagonist, the nitrosated mucoregulator, or the nitrosated purine agonist of claim 1 and a pharmaceutically acceptable carrier.

3. A nitrosated antimicrobial compound, a nitrosated adenosine antagonist, a nitrosated LTB4 antagonist, a nitrosated mucoregulator and a nitrosated purine agonist or a pharmaceutically acceptable salt thereof, having at least one nitrosated carboxylic acid group (-C(O)K), nitrosated hydroxyl group (-OK), nitrosated thiol group (-SK) and/or primary or secondary nitrosated amine group (-NK); wherein the nitrosated antimicrobial compounds is a nitrosated daptomycin, a nitrosated duramycin, a nitrosated nafcillin, a nitrosated tigecycline, a nitrosated PA-1806 or a nitrosated PA-2794; the nitrosated adenosine agonist is a nitrosated CPX; the nitrosated LTB4 antagonist is a nitrosated amelubant; the nitrosated mucoregulators is a nitrosated talniflumate, a nitrosated MSI-2216, a nitrosated ML-03 or a nitrosated INO-4995; the nitrosated purine agonist is a nitrosated P2Y2 agonist or a nitrosated INS-37217, a nitrosated uridine 5'triphosphate, or a nitrosated diquafosol tetrasodium;

wherein:

K is $-W'_a-E_b-(C(R_e)(R_f))_p-E_c-(C(R_e)(R_f))_x-W'_d-(C(R_e)(R_f))_y-W'_i-E_j-W'_g-(C(R_e)(R_f))_z-$

U-NO₂;

a, b, c, d, g, i and j are each independently an integer from 0 to 3;

p', x, y and z are each independently an integer from 0 to 10;

W' at each occurrence is independently -C(O)-, -C(S)-, -T'-, -(C(R_e)(R_f))_h-, an alkyl group, an aryl group, a heterocyclic ring, an arylheterocyclic ring, or -(CH₂CH₂O)_q-;

E at each occurrence is independently -T'-, an alkyl group, an aryl group, -(C(R_e)(R_f))_h-, a heterocyclic ring, an arylheterocyclic ring, or -(CH₂CH₂O)_q-;

T' at each occurrence is independently a covalent bond, a carbonyl, an oxygen, -S(O)_o- or -N(R_a)R_i;

h is an integer from 1 to 10;

q' is an integer from 1 to 5;

R_e and R_f are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, an alkylcycloalkyl, an alkylheterocyclic ring, a cycloalkylalkyl, a cycloalkylthio, a cycloalkenyl, an heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylalkyl, an alkoxyhaloalkyl, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cyano, an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, an alkylaryl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, an

alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfonyl, arylsulphonyloxy, a sulfonic ester, an alkyl ester, an aryl ester, a urea, a phosphoryl, a nitro, W'_h , $-(CH_2)_o-U-V_1$, or $-(C(R_g)(R_h))_k-U-V_2$, or R_e and R_f taken together with the carbons to which they are attached form a carbonyl, a methanthial, a heterocyclic ring, a cycloalkyl group, an aryl group, an oxime, a hydrazone or a bridged cycloalkyl group;

R_g and R_h at each occurrence are independently R_e ;

k is an integer from 1 to 3;

U at each occurrence is independently a covalent bond, a carbonyl, an oxygen,

$-S(O)_o-$ or $-N(R_a)R_i$;

V_1 is $-NO$ or $-NO_2$;

o is an integer from 0 to 2;

R_a is a lone pair of electrons, a hydrogen or an alkyl group;

R_i is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an alkylaryl, an alkylsulfinyl, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfinyl, an arylsulfonyl, arylsulphonyloxy, a sulfonamido, a carboxamido, a carboxylic ester, an aminoalkyl, an aminoaryl, $-CH_2-C(U-V_1)(R_e)(R_f)$, a bond to an adjacent atom creating a double bond to that atom, $-(N_2O_2)^- \cdot M^+$, wherein M^+ is an organic or inorganic cation.

5. A composition comprising the nitrosated antimicrobial compound, the nitrosated adenosine antagonist, the nitrosated LTB4 antagonist, the nitrosated mucoregulator, or the nitrosated purine agonist of claim 4 and a pharmaceutically acceptable carrier.

6. A nitrosylated antimicrobial compound, a nitrosylated adenosine antagonist, a nitrosylated LTB4 antagonist, a nitrosylated mucoregulator, a nitrosylated purine agonist, or a pharmaceutically acceptable salt thereof having at least one nitrosylated carboxylic acid group $-(C(O)K_1)$, nitrosylated hydroxyl group $-(OK_1)$, nitrosylated thiol group $-(SK_1)$ and/or primary or secondary nitrosylated amine group $-(NK_1)$;

wherein

K_1 is $-W'_a-E_b-(C(R_e)(R_f))_{p'}-E_c-(C(R_e)(R_f))_x-W'_d-(C(R_e)(R_f))_y-W'_i-E_j-W'_g-(C(R_e)(R_f))_z-U-NO$; and

$a, b, c, d, g, i, j, p', x, y, z, W', E, R_e, R_f$ and U are as defined herein.

7. A composition comprising the nitrosated antimicrobial compound, the nitrosated adenosine antagonist, the nitrosated LTB4 antagonist, the nitrosated mucoregulator,

or the nitrosated purine agonist of claim 6 and a pharmaceutically acceptable carrier.

8. The composition of claim 3, 5 or 7, wherein the antimicrobial compound is amikacin, azetreonam, azithromycin, colistin, duramycin, gentamycin, tigecycline, tobramycin, vancomycin, PA-1806 and PA-2794.

9. A method for treating a bacterial infection; treating a viral infection; treating a fungal infection; and/or treating a lesions in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 3, 5 or 7.

10. The method of claim 9, wherein the bacterial infection is a pulmonary infection selected from the group consisting of an endobronchial infection, cystic fibrosis, bronchiectasis, pneumonia, tuberculosis, emphysema, AIDS, pneumococcal meningitis, bacteremia, otitis media, chronic obstructive pulmonary disease, sinus congestion, common cold, septicemia; a gastrointestinal infection selected from the group consisting of chronic gastritis, a gastric ulcer, a duodenal ulcer, *Helicobacter pylori*, a gastric malignant lymphoma, gastroenteritis, diarrhea, dysentery, an inflammatory bowel disease, Crohn's disease, an ulcerative colitis; an infection resulting from *E. Coli*; and/or an infection of an eye, an ear or a nose.

11. The method of claim 10, wherein the bacterial infection is cystic fibrosis.

12. The composition of claim 3, 5 or 7, further comprising (i) at least one therapeutic agent; (ii) at least one nitric oxide donor compound; or (iii) at least one therapeutic agent and at least one nitric oxide donor compound.

13. The composition of claim 12, wherein the therapeutic agent is an aldosterone antagonist, an alpha-adrenergic receptor antagonist, a β -adrenergic agonist, an anti-allergic compound, an antidiabetic compound, an anti-hyperlipidemic drug, an antitussive compound, an angiotensin II antagonist, an angiotensin-converting enzyme inhibitor, an antioxidant, an antithrombotic and vasodilator drug, a β -adrenergic antagonists, a bronchodilator, a calcium channel blocker, a diuretic, an endothelin antagonist, an expectorant, a hydralazine compound, a H_2 receptor antagonist, a neutral endopeptidase inhibitor, a nonsteroidal antiinflammatory compound, a phosphodiesterase inhibitor, a potassium channel blocker, a platelet reducing agent, a proton pump inhibitor, a renin inhibitor, a selective cyclooxygenase-2 (COX-2) inhibitor, a steroid, or a combination of two or more thereof.

14. The composition of claim 13, wherein the nitric oxide donor compound is selected from the group consisting of a S-nitrosothiol, a nitrite, a nitrate, a S-nitrothiol, a sydnonimine, a NONOate, a N-nitrosoamine, a N-hydroxyl nitrosamine, a nitrosimine, a

diazetine dioxide, an oxatriazole 5-imine, an oxime, a hydroxylamine, a N-hydroxyguanidine, a hydroxyurea or a furoxan.

15. A method for treating a bacterial infection; treating a viral infection; treating a fungal infection; and/or treating a lesions in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 12.

16. A kit comprising at least one compound of claim 1, claim 4 or claim 6.

17. The kit of claim 16, further comprising further comprising (i) at least one therapeutic agent; (ii) at least one nitric oxide donor compound; or (iii) at least one therapeutic agent and at least one nitric oxide donor compound.

18. The kit of claim 17, wherein the (i) at least one therapeutic agent; (ii) at least one nitric oxide donor compound; or (iii) at least one therapeutic agent and at least one nitric oxide donor compound are in the form of separate components in the kit.